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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/055,098
Filing Date: January 22, 2002
Appellant(s): CHUNG ET AL.

Jenni R. Moen
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed October 5, 2007 appealing from the Office action mailed December 18, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

USPN 6,102,958	Meystel et al	08-2000
USPN 6,826,541	Johnston et al	11-2004

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 9, 11-14, 16, 20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Meystel et al (USPN 6,102,958).

As per claim 1, Meystel et al disclose a method for integrated decision support (i.e., multiresolutional decision support system 10, column 9, lines 17-21), comprising the steps of: receiving a plurality of decision inputs (i.e., data 16 is input into the system 10, column 9, lines 21-25); converting a first plurality of said received decision inputs to a plurality of graph representations (i.e., multi-valued graph

representation, column 16, lines 25-27); converting a second plurality of said received decision inputs to a plurality of mathematical representations (i.e., a statement of rules formed and organized by the module 32, wherein the module comprises means for extraction of data, the extraction comprising a standard algorithm, column 10, lines 9-21); decomposing said converted first plurality of said received decision inputs and said converted second plurality of said received decision inputs to a plurality of sub-problems (i.e., the organizational subsystem 20 organizes information for use by modeling system 22, column 9, lines 37-40); detecting a plurality of strongly-connected components associated with said plurality of subproblems (i.e., modeling subsystem 22 determines functional relationships of the organized data, column 9, lines 40-42), each of said plurality of strongly-connected components representing a connection between at least two of said plurality of sub-problems (i.e., system 10 broken down into a plurality of subsystems, each subsystem including one or more operational modules, column 9, lines 35-37); and solving said plurality of sub-problems (i.e., behavior generation subsystem 24 generates control commands, column 9, lines 42-44).

As per claim 2, Meystel et al disclose performing dependency propagation for said plurality of sub-problems; and placing said plurality of sub-problems in at least one predefined order for solution (i.e., developing of a multiresolutional data structure based on associative clusters, which transforms a provisional relational model into a multilevel hierarchical structure, column 10, lines 40-46).

As per claim 3, Meystel et al disclose executing a graph-theoretic algorithm for a plurality of mathematical equations associated with said plurality of strongly-connected components to prevent over-constraining (i.e., hierarchical clustering algorithms, column 16, lines 42-45).

As per claim 5, Meystel et al disclose detecting a plurality of dependency relations within said plurality of sub-problems (i.e., determination of functional relationships, column 9, lines 40-42).

As per claim 9, Meystel et al disclose said plurality of decision inputs comprises at least one of a plurality of option selection parameters (i.e., monitoring of a plurality of variables of functioning constraints, column 9, lines 26-28); a plurality of equality relation parameters; a plurality of dependency parameters; a plurality of production rule parameters; a plurality of logical relation parameters; a plurality of inequality expression parameters; and a plurality of geometric constraint parameters.

Claim 11 is rejected based upon the same rationale as the rejection of claim 1, since it is the computer-readable medium claim corresponding to the method claim.

Claims 12-14, 16 and 20 are rejected based upon the same rationale as the rejections of claims 1-3, 5 and 9, respectively, since they are the system claims corresponding to the method claims.

Claim 22 is rejected based upon the same rationale as the rejection of claim 1, since it is the system claim corresponding to the method claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4, 6-8, 10, 15, 17-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meystel et al (USPN 6,102,958), in view of Johnston et al (USPN 6,826,541).

As per claim 4, Meystel et al does not disclose decomposing said converted first plurality of said received decision inputs and said converted second plurality of said received decision inputs to a plurality of mathematical equations and algebraically solvable graph components. Johnston et al discloses a method for facilitating choices among complex alternatives, wherein a statistical algorithm implemented involves calculation of regression coefficients (column 12, lines 38-42), including matrix analysis (column 14). Both Meystel and Johnston are concerned with improving decision making, therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include decomposing received decision inputs to a plurality of mathematical equations and algebraically solvable graph components in Meystel, as seen in Johnston, as tool for making difficult decisions less complex (see Johnston, column 2, lines 21-26), thus making Meystel more effective and robust.

As per claims 6 and 7, Meystel et al does not disclose identifying a plurality of simultaneous equations within said plurality of sub-problems and solving a plurality of numerical sub-problems and a plurality of algebraic sub-problems. Johnston et al discloses a method for facilitating choices among complex alternatives, wherein a statistical algorithm implemented involves calculation of regression coefficients (column 12, lines 38-42), including matrix analysis (column 14). Both Meystel and Johnston are concerned with improving decision making, therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include identifying a plurality of simultaneous equations and solving a plurality of numerical sub-problems and a plurality of algebraic sub-problems in Meystel, as seen in Johnston, as tool for making difficult decisions less complex (see Johnston, column 2, lines 21-26), thus making Meystel more effective and robust.

As per claim 8, Meystel et al disclose solving a plurality of numerical relations subproblems with a numerical solution algorithm (i.e., process of local interpolation, column 18, lines 21-24); and solving a plurality of logical relations subproblems with a logical inference solution algorithm (i.e., learning algorithms implemented by collection and integration of experiences, column 15, lines 62-65). Meystel et al does not disclose solving a plurality of geometric relations subproblems with an algebraic solution algorithm. Johnston et al discloses a method for facilitating choices among complex alternatives, wherein a statistical algorithm implemented involves calculation of regression coefficients (column 12, lines 38-42), including matrix analysis (column 14). Both Meystel and Johnston are concerned with

improving decision making, therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include solving a plurality of geometric relations subproblems with an algebraic solution algorithm in Meystel, as seen in Johnston, as tool for making difficult decisions less complex (see Johnston, column 2, lines 21-26), thus making Meystel more effective and robust.

As per claim 10, Meystel et al does not disclose solving a plurality of simultaneous equations with a Newton-Raphson algorithm or Modified Gram-Schmidt algorithm. However, the Newton-Raphson algorithm and Modified Gram-Schmidt algorithms are old and well known in the art, therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include Newton-Raphson algorithm or Modified Gram-Schmidt algorithm in Meystel, as an efficient means of solving simultaneous equations, thus making Meystel more efficient and robust.

Claims 15, 17-19 and 21 are rejected based upon the same rationale as the rejections of claims 4, 6-8 and 10, respectively, since they are the system claims corresponding to the method claims.

(10) Response to Argument

In the Appeal Brief, Appellant argues that 1) Meystel et al does not disclose or suggest converting a second plurality of said received decision inputs to a plurality of mathematical representations, 2) Meystel et al does not disclose or suggest decomposing said converted first plurality of said received decision inputs and said

converted second plurality of said received decision inputs to a plurality of sub-problems, 3) Meystel et al does not disclose or suggest performing dependency propagation for said plurality of sub-problems, 4) Meystel et al does not disclose or suggest executing a graph-theoretic algorithm for a plurality of mathematical equations associated with said plurality of strongly-connected components to prevent over-constraining, 5) Meystel et al does not disclose or suggest detecting a plurality of dependency relations within said plurality of sub-problems, 6) neither Meystel et al nor Johnston et al disclose or suggest decomposing said converted first plurality of said received decision inputs and said converted second plurality of said received decision inputs to a plurality of mathematical equations and algebraically solvable graph components, 7) neither Meystel et al nor Johnston et al disclose or suggest identifying a plurality of simultaneous equations within said plurality of sub-problems and solving a plurality of numerical sub-problems and a plurality of algebraic sub-problems, 8) neither Meystel et al nor Johnston et al disclose or suggest solving a plurality of geometric relations subproblems with an algebraic solution algorithm, 9) one of ordinary skill in the art would not have been motivated to combine Meystel et al and Johnston et al, and 10) one of ordinary skill in the art would not have been motivated to modify Meystel et al with solving a plurality of simultaneous equations with a Newton-Raphson algorithm or Modified Gram-Schmidt algorithm.

With respect to argument 1, the Examiner respectfully disagrees. Meystel et al disclose a finite set of information assembled in association with search and retrieval

algorithms (column 15, lines 57-62). In addition, Meystel et al disclose a statement of rules formed and organized by the module 32, wherein the module comprises means for extraction of data, the extraction comprising standard algorithm (column 10, lines 9-21. As such, the statement of rules and algorithm are both mathematical representations. Moreover, contrary to Appellant's assertion, Meystel et al does not state that mathematical representations are not used. Rather, Meystel et al simply states that it does not use a *predetermined* mathematical model or algorithm, but instead a fluid provisional data structure (column 3, lines 3-12) and that it *eliminates the stage* of mathematical abstraction and parameter identification (column 21, lines 59-63). As such, neither cited portion precludes Meystel et al from teaching Appellant's invention.

With respect to argument 2, the Examiner respectfully disagrees. Meystel et al disclose the system 10 broken down into a plurality of subsystems including one or more operational modules, including an organizational subsystem 20 that acquires all input based information, and organizes such information for use by modeling system 22, wherein system 22 determines functional relationships of the organized data (column 9, lines 35-42). As such, Meystel et al indeed disclose decomposing said converted first plurality of said received decision inputs and said converted second plurality of said received decision inputs to a plurality of sub-problems

With respect to argument 3, the Examiner respectfully disagrees. Meystel et al disclose a resolutional structure development module, which includes developing of a multi-resolutional data structure based on associative clusters, which transforms a

provisional relational model into a multilevel hierarchical structure (column 10, lines 40-46). As a result, the development of the associative clusters indeed discloses performing dependency propagation for said plurality of sub-problems.

With respect to argument 4, the Examiner respectfully disagrees. Meystel et al disclose preprocessing acquired data or information using hierarchical clustering algorithms in order to synthesize a multi-resolutional knowledge base, wherein the data is organized into time-tagged arrays (column 16, lines 40-49), thus indeed disclosing executing a graph-theoretic algorithm for a plurality of mathematical equations associated with said plurality of strongly-connected components to prevent over-constraining.

With respect to argument 5, the Examiner respectfully disagrees. Meystel et al disclose the system 10 broken down into a plurality of subsystems including one or more operational modules, including an organizational subsystem 20 that acquires all input based information, and organizes such information for use by modeling system 22, wherein system 22 determines functional relationships of the organized data (column 9, lines 35-42). As such, Meystel et al indeed disclose detecting a plurality of dependency relations within said plurality of sub-problems.

With respect to argument 6, the Examiner respectfully disagrees. Johnston et al disclose two types of attribute data gathered from users, wherein, via regression analysis, both types of attribute data are analyzed as a single set of information (column 13, lines 49-67), including matrix analysis and representation (column 14). As such, Johnston et al indeed disclose decomposing said converted first plurality of

said received decision inputs (i.e., one set of attribute data) and said converted second plurality of said received decision inputs (i.e., second set of attribute data) to a plurality of mathematical equations and algebraically solvable graph components (i.e., matrix representation).

With respect to argument 7, the Examiner respectfully disagrees. Johnston et al a statistical algorithm implemented by utilities calculation engine involving calculation of regression coefficients for a plurality of variables y_i with i possible observations of the attributes (column 12, lines 35-55). As such, Johnston et al indeed disclose identifying a plurality of simultaneous equations within said plurality of sub-problems (i.e., plurality of regression equations for multiple variables and attributes) and solving a plurality of numerical sub-problems and a plurality of algebraic sub-problems.

With respect to argument 8, the Examiner respectfully disagrees. Johnston et al disclose two types of attribute data gathered from users, wherein, via regression analysis, both types of attribute data are analyzed as a single set of information (column 13, lines 49-67), including matrix analysis and representation (column 14). As such, the regression analysis indeed solves a plurality of geometric relations sub-problems with an algebraic solution algorithm.

With respect to argument 9, the Examiner respectfully disagrees. As discussed in the *KSR International Co. v. Teleflex Inc. et al.*, 550 U.S. ____(2007), "[o]ften, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace;

and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit. See *In re Kahn*, 441 F. 3d 977, 988 (CA Fed. 2006) ('[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness'). As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ."

With respect to argument 10, the Examiner respectfully disagrees. First, the Examiner submits that the Newton-Raphson and Modified Gram-Schmidt algorithms are old and well known in the art, as stated in the rejections of claims 10 and 21, in both the Non-final and Final office actions filed, June 19, 2006 and December 18, 2006, respectively. Moreover, as discussed in the *KSR International Co. v. Teleflex Inc. et al.*, 550 U.S. ____(2007), "[o]ften, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be

made explicit. See *In re Kahn*, 441 F. 3d 977, 988 (CA Fed. 2006) ('[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness'). As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ."

11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Andre Boyce
January 7, 2008

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Art Unit 3623